

REMARKS

Claims 1-39 have been deleted. Claims 44-75 are new claims. Support for independent Claim 44 is found on page 8, lines 1-9; page 18, lines 9-10; page 18, lines 2-7; and original Claims 1-3 and 13. Support for dependent Claims 45-57 is found on page 18, lines 2-7; page 19, lines 11-14; page 14, lines 19-22; page 15, lines 14-18; page 15, lines 17-18; page 15, line 16; page 17, lines 4-6; page 17, lines 7-8; page 17, lines 10-13; page 25, lines 15-25; page 21, lines 23-26; and page 24, line 20 through page 25, line 3, respectively and in the original claims. Support for independent Claim 58 is found in original claim 17 and in Examples 5A and 6A. Support for independent Claim 61 is found in the specification on page 19, lines 11-15 and in the original Claims 1-3 and 14. Support for independent Claim 73 is found in original claim 17 and Example 5A.

REQUEST FOR RECONSIDERATION

In the Office Action of July 5, 2001, the Examiner rejected Claims 1-4, 7, 11, 12, 16, 20-23, 26, 30, 31, 35 and 36 as anticipated by Ronay (U.S. Patent No. 5,876,409) under 35 U.S.C. §102(e). The Ronay patent describes a slurry for use in chemical mechanical polishing processes. The Ronay slurry may contain polymer particles, inorganic particles, water and other components. The polymer particles described by Ronay are polyionic in character and hence are able to chemisorb on oppositely charged surfaces (column 1, lines 40-43). The slurry is described as containing a polymer material adsorbed onto the inorganic particle (see for example the specification at column 3, lines 38-39; column 3, lines 45-46; column 3, lines 50-51; column 3, line 53; column 5, lines 10-11 etc.). Ronay therefore describes an invention in which the polymer is attached to (coats) the inorganic abrasive,

whereas the present application describes an invention wherein the inorganic abrasive is attached to (coats) the surface of the polymer.

It is clear that in the Ronay slurry the polymer coats the inorganic particle (i.e particles of polymer surround an inorganic particle; column 3, lines 49-56 and Figure 3). In contrast, in the present application a plurality of inorganic particles are said to attach (electrostatically bond) to the polymer particle (i.e the inorganic particles surround the polymer particle). This element of the invention is included in independent claims 44, 58, 61 and 73. The new independent claims clearly state "a plurality of said inorganic particles are attached to a surface of said polymer particles". This element of the new claims is not disclosed, claimed, implied or inherent to the invention in Ronay.

Objective measurements and comparative benchmarks of the particle size of the inorganic particle relative to the polymer particle are included in the new claims. The ratio of the mean particle size of the polymer particle (S_p) to the inorganic particle (S_i) is limited in claims 44 and 58 to values greater than 1. This is consistent with the polymer particle having a larger diameter than the inorganic particle. The polymer of the presently claimed invention can therefore be "coated" with the inorganic particles.

The composite particles claimed in the present invention contain a polymer particle electrostatically bonded to a plurality of inorganic particles. This aggregate (composite particle) offers important performance benefits over other chemical mechanical polishing (CMP) slurry compositions. The present polymer particle deforms under polishing pressure but remains bonded to the inorganic particles thus allowing a plurality of inorganic particles to remain in contact with the surface being polished. The polymer particle retains the inorganic particles electrostatically during deformation (page 18, lines 7-22). Scratching of the polished surface is minimized when the polymer particle is deformed under pressure.

The present invention also allows the pH of the slurry solution to be adjusted into the acidic range (page 14, lines 3-8). Figure 1 shows the relationship between the difference in zeta potential and pH. In contrast, the Ronay patent states that "Almost all oxide polishing in the microelectronics industry applies to colloidal silica slurry in the alkaline pH regime" (column 6, lines 33-34).

For the reasons stated above, the Ronay patent does not disclose all of the elements and limitations of the presently claimed invention and therefore cannot anticipate the present invention. Withdrawal of the rejection under 35 U.S.C. §102(e) is respectfully requested.

The Examiner further rejected Claims 13-15, 17-19, 32-34, and 37-39 as unpatentable over Ronay in view of Hiroto (JP Patent No. 152673) under 35 U.S.C. §103(a). Claims 5, 6, 8-10, 24, 25 and 27-29 were rejected as unpatentable over Ronay in view of Hosali et al (U.S. Patent No. 5,738,800) and Skrovan et al (U.S. Patent No. 5,916,819). As already mentioned, the presently claimed invention requires that a plurality of inorganic particles be attached to the surface of a polymer particle. This element of the invention is not taught in any of the prior art cited and therefore cannot be obvious in view of the prior art. Removal of the rejection under 35 U.S.C. §103(a) is respectfully requested.

It is respectfully submitted that the amendments to the claims place all claims in condition for allowance. Applicants thus respectfully request the reconsideration and withdrawal of the outstanding rejections, and passage of all now pending claims to issue.

Respectfully submitted,

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A handwritten signature in black ink, appearing to be 'Norman F. Oblon', written over the firm name.

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IN THE CLAIMS

Claims 1-39 (Cancelled).

Claims 44-75 (New).